Technical Publication Transfer
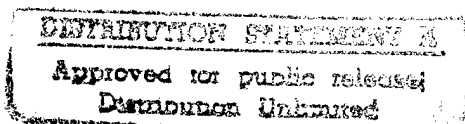
Using:

Gateway Conversion Technology's Data

MIL-M-28001A (SGML)
MIL-R-28002A (Raster)

Quick Short Test Report

10 June 1993

Prepared for

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Electronic Systems Center

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Quick Short Test Report

10 June 1993

Prepared By
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Contents

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Ac-
quisition and Life-Cycle Support (CALS) Test Network (AFCTN)
is conducting tests of the military standard for the Auto-
mated Interchange of Technical Information, MIL-STD-1840A,
and its companion suite of military specifications. The
AFCTN is a DoD sponsored confederation of voluntary partic-
ipants from industry and government managed by the Elec-
tronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effec-
tiveness of the CALS standards for technical data inter-
change and to demonstrate the technical capabilities and
operational suitability of those standards. Two general
categories of tests are performed to evaluate the standards;
formal and informal.

Formal tests are large and comprehensive, which follow a
written test plan, require specific authorization from the
DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN tech-
nical staff, to broaden the testing base. They include
representative samples of the many systems and applications
used by AFCTN participants. They also allow the AFCTN staff
to gain feedback from many industry and government inter-
pretations of the standards, to increase the base of par-
ticipation in the CALS initiative, and respond to the many
requests for help that come from participants. Partici-
pants take part voluntarily, benefit by receiving an evalu-
ation of their latest implementation (interpretation) of the
standards, interact with the AFCTN technical staff, gain
experience using the standards, and develop increased
confidence in them. The results of informal tests are
reported in Quick Short Test Reports (QSTRs) that briefly
summarize the standard(s) tested, the hardware and software
used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Gateway Conversion's interpretation and use of the CALS standards in transferring technical publication data. Gateway Conversion used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.

2. Test Parameters

Test Plan: AFCTB 93-061

Date of
Evaluation: 10 June 1993

Evaluator: George Elwood
                                    Air Force CALS Test Bed
                                    DET 2 HQ ESC/AV-2P
                                    4027 Colonel Glenn Hwy
                                    Suite 300
                                    Dayton OH   45431-1672

Data
Originator: Suzy Wharam
                                    Gateway Conversion Technology
                                    4709 Creekstone Drive
                                    Suite 300
                                    Morrisville NC   27560
                                    (919) 319-6500

Data
Description: Technical Manual Test
                                        1 Document Declaration file
                                        1 Document Type Definition (DTD)
                                        1 Text/Standard Generalize Markup Language
                                               (SGML) file
                                        10 Raster files

Data
Source System:
            1840
                        HARDWARE
                                    Unknown
                        SOFTWARE
                                    Unknown

            Text/SGML
                        HARDWARE
                                    Unknown
                        SOFTWARE
                                    SoftQuad

                    Raster
                            HARDWARE
                                    Unknown
                            SOFTWARE
                                    Unknown

Evaluation Tools Used:

            MIL-STD-1840A (TAPE)
                        SUN 3/280
                                    AFCTN *Tapetool v1.2.9 UNIX*
                                    XSoft *CAPS/CALS v40.4*
                                    Texas Instruments (TI) *Tapetool v1.0.1*
                        PC 486/50
                                    AFCTN *Tapetool v1.2.9 DOS*

            MIL-M-28001 (SGML)
                        SUN SparcStation 2
                            ,   ArborText *ADEPT v4.2.1*
                        PC 486/50
                                    Exoterica *XGMLNormalizer v1.2e3.2*
                                    Exoterica *Validator v2.0 ex1*
                                    McAfee & McAdam *Sema Mark-it v2.3*
                                    Public Domain *sgmls*

            MIL-R-28002 (Raster)
                        SUN SparcStation 2
                                    ArborText *g42tiff*
                                    XSoft *CAPS ccitt2caps v6.0x*
                                    Carberry *CADLeaf Plus v3.1*
                                    AFCTN *validg4*
                                    AFCTN *calstb.475*
                                    IGES Data Analysis (IDA) *IGESView v3.0*
                                    Island Graphics *IslandPaint v3.0*
                        PC 486/50
                                    AFCTN *validg4*
                                    IDA *IGESView Windows*
                                    Inset Systems *HiJaak v2.1*
                                    Inset Systems *HiJaak Window v1.0*
                                    Corel *Ventura Publisher*

Standards
Tested: MIL-STD-1840A
                        MIL-M-28001A
                        MIL-R-28002A

3. 1840A Analysis

3.1 External Packaging

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was marked with a magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was enclosed in a barrier bag as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed the label indicating the recording density, as required by MIL-STD-1840A, para. 5.3.1. Enclosed in the box was a packing list showing all files recorded on the tape.

3.2 Transmission Envelope

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

The tape was run through the AFCTN *Tapetool v1.2.9* utility. No errors were encountered while evaluating the contents of the tape labels.

The tape was read using the XSoft *CAPS read1840A* utility without any reported errors.

The tape was read using the TI *Tapetool v1.0.1* without any reported errors.

The physical tape structure meets the CALS MIL-STD-1840A requirements.

3.2.2 Declaration and Header Fields

No errors were found in the Document Declaration file and data file headers.

This portion of the tape meets the CALS MIL-STD-1840A requirements.

4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were included on this tape.

5. SGML Analysis

The AFCTB has several parsers available for evaluating submitted DTD and Text files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. These products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings unless specified in the report. Changes to DTD or Text files required by each system are not documented in the report.

The tape contained one Text file and one DTD. All parsers available in the AFCTB reported errors. See the Appendix to this report for the error logs.

The first reported error, from some of the parsers, was typos in the external identifiers. Shown below are the entities which had to be changed.

```
                                              Added here V
<!ENTITY % ISOgrk3 PUBLIC "ISO 8879-1986//ENTITIES Greek Symbols//EN"
                          "/app/sqps/dtds/entities/isogrk3.ent">
<!ENTITY % ISOlat1 PUBLIC "ISO 8879-1986//ENTITIES Laten 1/EN"
                            ■Added Latin 1/■ ^^^^^^^^
                          "/app/sqps/dtds/entities/isolat1.ent">
```

Errors in the Text file relate to incorrect definitions for STEP1, STEP2, and the PARA within those elements. See the error logs in the Appendix of this report for specific locations within the Text file.

The Text file and DTD from the tape were evaluated using another parser available within the AFCTB. Because of the errors in the DTD, it would not compiled and the Text file was not evaluated.

The Text file and DTD from this document were evaluated using Exoterica's *Validator exl*, Exoterica's *XGMLNormalizer*, McAfee & McAdam's *Sema Mark-it*, and the Public Domain *sgmls* parsers.

The DTD and Text file do not meet the CALS MIL-M-28001A specification.

6. Raster Analysis

The tape contained ten Raster files. All ten files were evaluated using the AFCTN *validg4* utility. This program reported all ten files meet the CALS MIL-R-28002A specification.

The files were read into the AFCTN *calstb.475* viewing utility. No problems were noted.

The AFCTB has several tools for viewing Raster files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The files were converted using ArborText's *g42tiff* utility without a reported error. The resulting files were read into Island Graphics' *IslandPaint* and displayed.

The Raster files were read into Carberry's *CADLeaf* software without a reported error and displayed.

The files were read into IDA's *IGESView* and *IGESView for Windows* without a reported error and displayed.

The files were read into Inset Systems' *HiJaak for Windows* without a reported error and displayed.

The files were converted using Inset Systems' *HiJaak for DOS* into an IMG format without a reported error. The resulting files were read into Corel's *Ventura Publisher*, displayed and printed.

The Raster files were converted using Rosetta Technologies' *Prepare* without a reported error. The resulting files were read into Rosetta Technologies' *Preview* and displayed.

The Raster files meet the CALS MIL-R-28002A specification.

7. CGM Analysis

No Computer Graphics Metafile (CGM) files were included on this tape.

8. Conclusions and Recommendations

The tape submitted by Gateway Conversion Technology has no reported Document Declaration or CALS header errors. The physical structure of the tape meets the CALS MIL-STD-1840A requirements.

The Text file and DTD had multiple reported errors from all parsers available within the AFCTB. The SGML file does not meet the CALS MIL-M-28001A specification.

The Raster files meet the CALS MIL-R-28002A specification.

Because of the reported errors in the SGML file, the tape does not meet the CALS MIL-STD-1840A requirements.

9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

Air Force CALS Test Network Catalog Evaluation - Version 1.2; Release 9 (O)

Standards referenced:
  MIL-STD-1840A (1987) - Automated Interchange of Technical Information
  ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes
                      for Information Interchange
  ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Tue Jun 8 16:56:25 1993

MIL-STD-1840A File Catalog

File Set Directory: /cals/u129/Set014

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D001G001	DTD	D/00260	02048/000012	Extracted
D001R002	Raster	F/00128	02048/000012	Extracted
D001R003	Raster	F/00128	02048/000015	Extracted
D001R004	Raster	F/00128	02048/000007	Extracted
D001R005	Raster	F/00128	02048/000016	Extracted
D001R006	Raster	F/00128	02048/000013	Extracted
D001R007	Raster	F/00128	02048/000006	Extracted
D001R008	Raster	F/00128	02048/000007	Extracted
D001R009	Raster	F/00128	02048/000003	Extracted
D001R010	Raster	F/00128	02048/000013	Extracted
D001T011	Text	D/00260	02048/000063	Extracted

Catalog Process terminated normally.

9.2 Tape Evaluation Log

Air Force CALS Test Network Tape Evaluation - Version 1.2; Release 9 (O)
    Standards referenced:
        ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes
                            for Information Interchange
        ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Tue Jun 8 16:56:10 1993

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1CALS01   4

    Label Identifier: VOL1   ,
    Volume Identifier: CALS01
    Volume Accessibility:
    Owner Identifier:
    Label Standard Version: 4

HDR1D001   CALS0100010001000000 93154 00000 000000

    Label Identifier: HDR1
    File Identifier: D001
    File Set Identifier: CALS01
    File Section Number: 0001
    File Sequence Number: 0001
    Generation Number: 0000
    Generation Version Number: 00
    Creation Date: 93154
    Expiration Date: 00000
    File Accessibility:
    Block Count: 000000
    Implementation Identifier:

HDR2D0204800260   00

    Label Identifier: HDR2
    Recording Format: D
    Block Length: 02048
    Record Length: 00260
    Offset Length: 00

************ Tape Mark ***************

  Actual Block Size Found = 2048 Bytes.

  Number of data blocks read = 1.

************ Tape Mark ***************

EOF1D001   CALS0100010001000000 93154 00000 000001

  Label Identifier: EOF1
  File Identifier: D001
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0001
  Generation Number: 0000
  Generation Version Number: 00
  Creation Date: 93154
  Expiration Date: 00000   ,
  File Accessibility:
  Block Count: 000001
  Implementation Identifier:

EOF2D0204800260   00

  Label Identifier: EOF2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

************ Tape Mark ***************

                  <<<<< PART OF LOG REMOVED HERE >>>>>

************ Tape Mark ***************

############ End of Volume CALS01 #############

############ End Of Tape File Set #############

Deallocating /dev/rmt0...

Tape Import Process terminated normally.

9.3 Tape File Set Validation Log

Air Force CALS Test Network File Set Evaluation - Version 1.2; Release 9 (O)

   Standards referenced:
      MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Tue Jun 8 16:56:25 1993

MIL-STD-1840A File Set Evaluation Log

File Set: Set014

Found file: D001
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: Gateway Conversion Technologies, Inc.
srcdocid: TO16C1-27-28-2   ,
srcrelid: NONE
chglvl: ORIGINAL
dteisu: 19930603
dstsys: Northop Corp.
dstdocid: TO16C1-27-28-2
dstrelid: NONE
dtetrn: 19930603
dlvacc: Proof of Concept
filcnt: G1,R9,T1
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: Technical Manual
docttl: CONTROL STICK, PILOT'S GRIP 9021270400-1

                  <<<<< PART OF LOG REMOVED HERE >>>>>

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D001.
No errors were encountered in this File Set.
MIL-STD-1840A File Set Evaluation Complete.

10. Appendix B - Detailed SGML Analysis

10.1 Parser Log

```
                  SGML Document Type Definition Parser
                      An SGML System Conforming to
                    International Standard ISO 8879
                    Standard Generalized Markup Language

Log file: '9361.LOG'
SDO File: 'ctndecl.sdo'
Namecase General is yes.
Namecase Entity is no.
Parsing DTD file: '9361.dtd'
<!ENTITY bull DTD0143: Attempt to declare general entity name 'bull'
         more than once denied.
         In declaration: '<!ENTITY'.
         In declaration: '<!DOCTYPE'.
         in line 47 in file '\public\iso$pub.ent'
         in line 31 in file '9361.dtd'
   SDATA "[bull  ]"--/bullet B: =round bullet, filled-->
<!ENTITY lt DTD0143: Attempt to declare general entity name 'lt'
         more than once denied.
         In declaration: '<!ENTITY'.
         In declaration: '<!DOCTYPE'.
         in line 25 in file '\public\iso$num.ent'
         in line 34 in file '9361.dtd'
     SDATA "[lt    ]"--=less-than sign R:-->

<!ELEMENT note        - o (para+|%list;)>
<!ATTLIST note            type      CDATA       #IMPLIED
                          XREFID    idref
DTD0137: Incorrect token 'idref'.
Parser Ignoring Input Up To Next MDO.
         In declaration: '<!ATTLIST'.
         In declaration: '<!DOCTYPE'.
         in entity 'list'
         in line 364 in file '9361.dtd'
     #implied
                          %att;>

DTD0096: The generic ID DOCNO has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID EQPTTYPE has not been used in any content
         model, inclusion, or as a doctype element.
```

DTD0096: The generic ID HCI has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID HRULE has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID MODELNO has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID PHASE has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID SUPEQP has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID SUPPLIES has not been used in any content
         model, inclusion, or as a doctype element.

DTD does not conform to ISO 8879 standard due to these errors:
    Uncorrectable syntax error count: 1
.DTO file not created due to parsing errors.

Program status code: 5.

10.2   Exoterica XGMLNormalizer Parser

10.2.1   DTD Parser Log

```
C:\XGML\XGMLNORM.EXE --
Error on line 10 in file entities/9361.dtd:
A formal public identifier is invalid.
For ENTITY declaration 'ISOgrk3': The formal identifier is 'ISO
8879-1986//ENTITIES Gr ...'.

C:\XGML\XGMLNORM.EXE --
Error on line 12 in file entities/9361.dtd:
A formal public identifier is invalid.
For ENTITY declaration 'ISOlat1': The formal identifier is 'ISO
8879-1986//ENTITIES La ...'.

C:\XGML\XGMLNORM.EXE --
Error on line 19 in file entities/9361.dtd:
Invalid file specification (external identifier).
For the entity 'ISOgrk3':
The system id is "".
The public id is "ISO 8879-1986//ENTITIES Gr ...".
```

10.2.2 Text File Parser Log

```
C:\XGML\XGMLNORM.EXE --
Error on line 3087 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'STEP2'.


C:\XGML\XGMLNORM.EXE --
Error on line 3087 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'PARA'.


C:\XGML\XGMLNORM.EXE --
Error on line 3087 in file i:\9361\d001t011:
The start tag of an empty element has been omitted.
The element is 'PARA'.


C:\XGML\XGMLNORM.EXE --
Error on line 3112 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'STEP2'.


C:\XGML\XGMLNORM.EXE --
Error on line 3112 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'PARA'.


C:\XGML\XGMLNORM.EXE --
Error on line 3112 in file i:\9361\d001t011:
The start tag of an empty element has been omitted.
The element is 'PARA'.


C:\XGML\XGMLNORM.EXE --
Error on line 5031 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'STEP2'.


C:\XGML\XGMLNORM.EXE --
Error on line 5031 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'PARA'.


C:\XGML\XGMLNORM.EXE --
Error on line 5031 in file i:\9361\d001t011:
The start tag of an empty element has been omitted.
The element is 'PARA'.
```

C:\XGML\XGMLNORM.EXE --
Error on line 5056 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'STEP2'.

C:\XGML\XGMLNORM.EXE --
Error on line 5056 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --
Error on line 5056 in file i:\9361\d001t011:
The start tag of an empty element has been omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --
Error on line 5298 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'STEP2'.

C:\XGML\XGMLNORM.EXE --
Error on line 5298 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --
Error on line 5298 in file i:\9361\d001t011:
The start tag of an empty element has been omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --
Error on line 5319 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'STEP2'.

C:\XGML\XGMLNORM.EXE --
Error on line 5319 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --
Error on line 5319 in file i:\9361\d001t011:
The start tag of an empty element has been omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --

Error on line 5389 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'STEP2'.

C:\XGML\XGMLNORM.EXE --
Error on line 5389 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --
Error on line 5389 in file i:\9361\d001t011:
The start tag of an empty element has been omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --
Error on line 5430 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'STEP2'.

C:\XGML\XGMLNORM.EXE --
Error on line 5430 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --
Error on line 5430 in file i:\9361\d001t011:
The start tag of an empty element has been omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --
Error on line 5486 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'STEP2'.

C:\XGML\XGMLNORM.EXE --
Error on line 5486 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --
Error on line 5486 in file i:\9361\d001t011:
The start tag of an empty element has been omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --
Error on line 5524 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.

The element is 'STEP2'.

C:\XGML\XGMLNORM.EXE --
Error on line 5524 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --
Error on line 5524 in file i:\9361\d001t011:
The start tag of an empty element has been omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --
Error on line 5539 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'STEP2'.

C:\XGML\XGMLNORM.EXE --
Error on line 5539 in file i:\9361\d001t011:
A start tag is missing that must not be omitted.
The element is 'PARA'.

C:\XGML\XGMLNORM.EXE --
Error on line 5539 in file i:\9361\d001t011:
The start tag of an empty element has been omitted.
The element is 'PARA'.

10.3 Exoterica Validator exl

```
<!-- Entity has no name, system id or public id in formal file -->.
<!-- **Warning** in "iso-pub.ent" (entity "%ISOpub"), line 47 in "9361.sgm", line 104:
   A general entity name has been declared more than once.
   The entity is "bull".
   <!ENTITY bull   SDATA "[bull  ]"--/bullet B: =round bullet, filled-->
                   ^^^^
-->
<!-- **Warning** in "iso-num.ent" (entity "%ISOnum"), line 26 in "9361.sgm", line 107:
   A general entity name has been declared more than once.
   The entity is "lt".
   <!ENTITY lt     SDATA "[lt    ]"--=less-than sign R:-->
                   ^^
-->
<!-- **Warning**:
   An element with mixed content should permit data characters ("#PCDATA")
   everywhere.
   The element being declared is "ENTRY".
   (((#PCDATA|xref|change|emphasis|esd|hcp|ocp|
      ^^^^^^^
-->
<!-- **Warning**:
   An element with mixed content should permit data characters ("#PCDATA")
   everywhere.
   The element being declared is "NOTICE".
   (((#PCDATA|xref|change|emphasis|esd|hcp|ocp|
      ^^^^^^^
-->
<!-- Entity has no name, system id or public id in formal file -->.
<!-- **Warning** in "9361.sgm", line 664:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "DOCNO".
-->
<!-- **Warning** in "9361.sgm", line 664:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "EQPTTYPE".
-->
<!-- **Warning** in "9361.sgm", line 664:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "HCI".
-->
<!-- **Warning** in "9361.sgm", line 664:
```

An element is not allowed in the document instance because it does not
appear in any accessible content model or it is completely excluded.
The element is "HRULE".
-->
<!-- **Warning** in "9361.sgm", line 664:
An element is not allowed in the document instance because it does not
appear in any accessible content model or it is completely excluded.
The element is "MODELNO".
-->
<!-- **Warning** in "9361.sgm", line 664:
An element is not allowed in the document instance because it does not
appear in any accessible content model or it is completely excluded.
The element is "PHASE".
-->
<!-- **Warning** in "9361.sgm", line 664:
An element is not allowed in the document instance because it does not
appear in any accessible content model or it is completely excluded.
The element is "QUANTITY".
-->
<!-- **Warning** in "9361.sgm", line 664:
An element is not allowed in the document instance because it does not
appear in any accessible content model or it is completely excluded.
The element is "SPECIFICATION".
-->
<!-- **Warning** in "9361.sgm", line 664:
An element is not allowed in the document instance because it does not
appear in any accessible content model or it is completely excluded.
The element is "SUPEQP".
-->
<!-- **Warning** in "9361.sgm", line 664:
An element is not allowed in the document instance because it does not
appear in any accessible content model or it is completely excluded.
The element is "SUPPLIES".
-->
<!-- **Warning** in "9361.sgm", line 3751:
An end tag has been encountered for some element other than the currently
opened one and some opened element other than the currently opened one must
be closed without its content being fully satisfied or with its inomissible
end tag omitted.
The element is "STEP1".
The open elements are "DOCIM", "BODY", "CHAPTER", "PARA0", "SUBPARA1", and
"STEP1".
The following elements can start: "BRK", "CAUTION", "FIGURE", "NOTE",
"PARA", "PGBRK", "RESULT", "STEP2", "TABLE", or "WARNING".
on the grip.</PARA></NOTE></STEP1>
                        /\
-->

```
<!-- **Error** in "9361.sgm", line 3751:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "STEP2".
   on the grip.</PARA></NOTE></STEP1>
                          /\
-->
<!-- **Error** in "9361.sgm", line 3751:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "PARA".
   on the grip.</PARA></NOTE></STEP1>
                          /\
-->
<!-- **Warning** in "9361.sgm", line 3776:
   An end tag has been encountered for some element other than the currently
   opened one and some opened element other than the currently opened one must
   be closed without its content being fully satisfied or with its inomissible
   end tag omitted.
   The element is "STEP1".
   The open elements are "DOCIM", "BODY", "CHAPTER", "PARA0", "SUBPARA1", and
   "STEP1".
   The following elements can start: "BRK", "CAUTION", "FIGURE", "NOTE",
   "PARA", "PGBRK", "RESULT", "STEP2", "TABLE", or "WARNING".
   pins or wires of the grip</PARA></NOTE></STEP1>
                                           /\
-->
<!-- **Error** in "9361.sgm", line 3776:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "STEP2".
   pins or wires of the grip</PARA></NOTE></STEP1>
                                           /\
-->
<!-- **Error** in "9361.sgm", line 3776:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "PARA".
   pins or wires of the grip</PARA></NOTE></STEP1>
                                           /\
-->
<!-- **Warning** in "9361.sgm", line 5695:
   An end tag has been encountered for some element other than the currently
   opened one and some opened element other than the currently opened one must
   be closed without its content being fully satisfied or with its inomissible
   end tag omitted.
   The element is "STEP1".
```

The open elements are "DOCIM", "BODY", "CHAPTER", "PARA0", "SUBPARA1", and
"STEP1".
The following elements can start: "BRK", "CAUTION", "FIGURE", "NOTE",
"PARA", "PGBRK", "RESULT", "STEP2", "TABLE", or "WARNING".
switch.</PARA></NOTE></STEP1>
                        /\
-->
<!-- **Error** in "9361.sgm", line 5695:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "STEP2".
   switch.</PARA></NOTE></STEP1>
                        /\
-->
<!-- **Error** in "9361.sgm", line 5695:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "PARA".
   switch.</PARA></NOTE></STEP1>
                        /\   ,
-->
<!-- **Warning** in "9361.sgm", line 5720:
   An end tag has been encountered for some element other than the currently
   opened one and some opened element other than the currently opened one must
   be closed without its content being fully satisfied or with its inomissible
   end tag omitted.
   The element is "STEP1".
   The open elements are "DOCIM", "BODY", "CHAPTER", "PARA0", "SUBPARA1", and
   "STEP1".
   The following elements can start: "BRK", "CAUTION", "FIGURE", "NOTE",
   "PARA", "PGBRK", "RESULT", "STEP2", "TABLE", or "WARNING".
   (17) and pin (21)</PARA></NOTE></STEP1></SUBPARA1>
                        /\
-->
<!-- **Error** in "9361.sgm", line 5720:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "STEP2".
   (17) and pin (21)</PARA></NOTE></STEP1></SUBPARA1>
                        /\
-->
<!-- **Error** in "9361.sgm", line 5720:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "PARA".
   (17) and pin (21)</PARA></NOTE></STEP1></SUBPARA1>
                        /\

```
-->
<!-- **Warning** in "9361.sgm", line 5962:
   An end tag has been encountered for some element other than the currently
   opened one and some opened element other than the currently opened one must
   be closed without its content being fully satisfied or with its inomissible
   end tag omitted.
   The element is "STEP1".
   The open elements are "DOCIM", "BODY", "CHAPTER", "PARA0", "SUBPARA1", and
   "STEP1".
   The following elements can start: "BRK", "CAUTION", "FIGURE", "NOTE",
   "PARA", "PGBRK", "RESULT", "STEP2", "TABLE", or "WARNING".
   7-5.</PARA></CAUTION></STEP1>
                        /\
-->
<!-- **Error** in "9361.sgm", line 5962:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "STEP2".
   7-5.</PARA></CAUTION></STEP1>
                        /\    ,
-->
<!-- **Error** in "9361.sgm", line 5962:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "PARA".
   7-5.</PARA></CAUTION></STEP1>
                        /\
-->
<!-- **Warning** in "9361.sgm", line 5983:
   An end tag has been encountered for some element other than the currently
   opened one and some opened element other than the currently opened one must
   be closed without its content being fully satisfied or with its inomissible
   end tag omitted.
   The element is "STEP1".
   The open elements are "DOCIM", "BODY", "CHAPTER", "PARA0", "SUBPARA1", and
   "STEP1".
   The following elements can start: "BRK", "CAUTION", "FIGURE", "NOTE",
   "PARA", "PGBRK", "RESULT", "STEP2", "TABLE", or "WARNING".
   installation of connector (1) step 9.</PARA></NOTE></STEP1>
                                                     /\
-->
<!-- **Error** in "9361.sgm", line 5983:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "STEP2".
   installation of connector (1) step 9.</PARA></NOTE></STEP1>
                                                     /\
```

-->
<!-- **Error** in "9361.sgm", line 5983:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "PARA".
   installation of connector (1) step 9.</PARA></NOTE></STEP1>
                                                        /\
-->
<!-- **Warning** in "9361.sgm", line 6053:
   An end tag has been encountered for some element other than the currently
   opened one and some opened element other than the currently opened one must
   be closed without its content being fully satisfied or with its inomissible
   end tag omitted.
   The element is "STEP1".
   The open elements are "DOCIM", "BODY", "CHAPTER", "PARA0", "SUBPARA1", and
   "STEP1".
   The following elements can start: "BRK", "CAUTION", "FIGURE", "NOTE",
   "PARA", "PGBRK", "RESULT", "STEP2", "TABLE", or "WARNING".
   make this ground junction.</PARA></NOTE></STEP1>
                                                  /\
-->
<!-- **Error** in "9361.sgm", line 6053:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "STEP2".
   make this ground junction.</PARA></NOTE></STEP1>
                                                  /\
-->
<!-- **Error** in "9361.sgm", line 6053:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "PARA".
   make this ground junction.</PARA></NOTE></STEP1>
                                                  /\
-->
<!-- **Warning** in "9361.sgm", line 6094:
   An end tag has been encountered for some element other than the currently
   opened one and some opened element other than the currently opened one must
   be closed without its content being fully satisfied or with its inomissible
   end tag omitted.
   The element is "STEP1".
   The open elements are "DOCIM", "BODY", "CHAPTER", "PARA0", "SUBPARA1", and
   "STEP1".
   The following elements can start: "BRK", "CAUTION", "FIGURE", "NOTE",
   "PARA", "PGBRK", "RESULT", "STEP2", "TABLE", or "WARNING".
   sources of ignition.</PARA></WARNING></STEP1>
                                            /\

-->
<!-- **Error** in "9361.sgm", line 6094:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "STEP2".
   sources of ignition.</PARA></WARNING></STEP1>
                                        /\
-->
<!-- **Error** in "9361.sgm", line 6094:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "PARA".
   sources of ignition.</PARA></WARNING></STEP1>
                                        /\
-->
<!-- **Warning** in "9361.sgm", line 6150:
   An end tag has been encountered for some element other than the currently
   opened one and some opened element other than the currently opened one must
   be closed without its content being fully satisfied or with its inomissible
   end tag omitted.   ,
   The element is "STEP1".
   The open elements are "DOCIM", "BODY", "CHAPTER", "PARA0", "SUBPARA1", and
   "STEP1".
   The following elements can start: "BRK", "CAUTION", "FIGURE", "NOTE",
   "PARA", "PGBRK", "RESULT", "STEP2", "TABLE", or "WARNING".
   any adjustments.</PARA></NOTE></STEP1>
                                  /\
-->
<!-- **Error** in "9361.sgm", line 6150:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "STEP2".
   any adjustments.</PARA></NOTE></STEP1>
                                  /\
-->
<!-- **Error** in "9361.sgm", line 6150:
   A start tag with a start tag minimization of minus ("-") must not be
   omitted.
   The element is "PARA".
   any adjustments.</PARA></NOTE></STEP1>
                                  /\
-->
<!-- **Warning** in "9361.sgm", line 6188:
   An end tag has been encountered for some element other than the currently
   opened one and some opened element other than the currently opened one must
   be closed without its content being fully satisfied or with its inomissible
   end tag omitted.

The element is "STEP1".
The open elements are "DOCIM", "BODY", "CHAPTER", "PARA0", "SUBPARA1", and
"STEP1".
The following elements can start: "BRK", "CAUTION", "FIGURE", "NOTE",
"PARA", "PGBRK", "RESULT", "STEP2", "TABLE", or "WARNING".
7-4, it will be necessary to adjust the switch actuators.</PARA></NOTE></ST
                                                                        /\
-->
<!-- **Error** in "9361.sgm", line 6188:
A start tag with a start tag minimization of minus ("-") must not be
omitted.
The element is "STEP2".
7-4, it will be necessary to adjust the switch actuators.</PARA></NOTE></ST
                                                                        /\
-->
<!-- **Error** in "9361.sgm", line 6188:
A start tag with a start tag minimization of minus ("-") must not be
omitted.
The element is "PARA".
7-4, it will be necessary to adjust the switch actuators.</PARA></NOTE></ST
                                                                        /\
-->
<!-- **Warning** in "9361.sgm", line 6203:
An end tag has been encountered for some element other than the currently
opened one and some opened element other than the currently opened one must
be closed without its content being fully satisfied or with its inomissible
end tag omitted.
The element is "STEP1".
The open elements are "DOCIM", "BODY", "CHAPTER", "PARA0", "SUBPARA1", and
"STEP1".
The following elements can start: "BRK", "CAUTION", "FIGURE", "NOTE",
"PARA", "PGBRK", "RESULT", "STEP2", "TABLE", or "WARNING".
be adjusted in the field.</PARA></NOTE></STEP1>
                                          /\
-->
<!-- **Error** in "9361.sgm", line 6203:
A start tag with a start tag minimization of minus ("-") must not be
omitted.
The element is "STEP2".
be adjusted in the field.</PARA></NOTE></STEP1>
                                          /\
-->
<!-- **Error** in "9361.sgm", line 6203:
A start tag with a start tag minimization of minus ("-") must not be
omitted.
The element is "PARA".
be adjusted in the field.</PARA></NOTE></STEP1>

```
                                                      /\
-->
<!-- 22 errors and 25 warnings reported. -->
```

10.4 Sema Mark-it Log

```
<!--*** file:\XVALID\9361.SGM line:3749 pos:77835
A STEP1 end-tag is not allowed in the current context.
The following tags can be used (within document type DOCIM) at this point:
<RESULT> <STEP2> .
The following elements are currently open:
STEP1 SUBPARA1 PARA0 CHAPTER BODY DOCIM .
The following entities are open:
\XVALID\9361.SGM .-->


<!--*** file:\XVALID\9361.SGM line:3774 pos:78743
A STEP1 end-tag is not allowed in the current context.
The following tags can be used, (within document type DOCIM) at this point:
<RESULT> <STEP2> .
The following elements are currently open:
STEP1 SUBPARA1 PARA0 CHAPTER BODY DOCIM .
The following entities are open:
\XVALID\9361.SGM .-->


<!--*** file:\XVALID\9361.SGM line:5693 pos:103121
A STEP1 end-tag is not allowed in the current context.
The following tags can be used (within document type DOCIM) at this point:
<RESULT> <STEP2> .
The following elements are currently open:
STEP1 SUBPARA1 PARA0 CHAPTER BODY DOCIM .
The following entities are open:
\XVALID\9361.SGM .-->


<!--*** file:\XVALID\9361.SGM line:5718 pos:104106
A STEP1 end-tag is not allowed in the current context.
The following tags can be used (within document type DOCIM) at this point:
<RESULT> <STEP2> .
The following elements are currently open:
STEP1 SUBPARA1 PARA0 CHAPTER BODY DOCIM .
The following entities are open:
\XVALID\9361.SGM .-->


<!--*** file:\XVALID\9361.SGM line:5960 pos:111487
A STEP1 end-tag is not allowed in the current context.
The following tags can be used (within document type DOCIM) at this point:
```

```
<NOTE> <RESULT> <STEP2> .
The following elements are currently open:
STEP1 SUBPARA1 PARA0 CHAPTER BODY DOCIM .
The following entities are open:
\XVALID\9361.SGM .-->


<!--*** file:\XVALID\9361.SGM line:5981 pos:112332
A STEP1 end-tag is not allowed in the current context.
The following tags can be used (within document type DOCIM) at this point:
<RESULT> <STEP2> .
The following elements are currently open:
STEP1 SUBPARA1 PARA0 CHAPTER BODY DOCIM .
The following entities are open:
\XVALID\9361.SGM .-->


<!--*** file:\XVALID\9361.SGM line:6051 pos:114686
A STEP1 end-tag is not allowed in the current context.
The following tags can be used (within document type DOCIM) at this point:
<RESULT> <STEP2> .
The following elements are currently open:
STEP1 SUBPARA1 PARA0 CHAPTER BODY DOCIM .
The following entities are open:
\XVALID\9361.SGM .-->


<!--*** file:\XVALID\9361.SGM line:6092 pos:116234
A STEP1 end-tag is not allowed in the current context.
The following tags can be used (within document type DOCIM) at this point:
<CAUTION> <NOTE> <RESULT> <STEP2> .
The following elements are currently open:
STEP1 SUBPARA1 PARA0 CHAPTER BODY DOCIM .
The following entities are open:
\XVALID\9361.SGM .-->


<!--*** file:\XVALID\9361.SGM line:6148 pos:118518
A STEP1 end-tag is not allowed in the current context.
The following tags can be used (within document type DOCIM) at this point:
<RESULT> <STEP2> .
The following elements are currently open:
STEP1 SUBPARA1 PARA0 CHAPTER BODY DOCIM .
The following entities are open:
\XVALID\9361.SGM .-->


<!--*** file:\XVALID\9361.SGM line:6186 pos:119860
A STEP1 end-tag is not allowed in the current context.
The following tags can be used (within document type DOCIM) at this point:
<RESULT> <STEP2> .
The following elements are currently open:
```

STEP1 SUBPARA1 PARA0 CHAPTER BODY DOCIM .
The following entities are open:
\XVALID\9361.SGM .-->

<!--*** file:\XVALID\9361.SGM line:6201 pos:120487
A STEP1 end-tag is not allowed in the current context.
The following tags can be used (within document type DOCIM) at this point:
<RESULT> <STEP2> .
The following elements are currently open:
STEP1 SUBPARA1 PARA0 CHAPTER BODY DOCIM .
The following entities are open:
\XVALID\9361.SGM .-->

10.5 Public Domain sgmls Log

```
sgmls: SGML error at 9361.dtd, line 25 in declaration parameter 6:
       Formal public identifier "ISO 8879-1986//ENTITIES Greek Symbols/EN" invalid; tr
       as informal
sgmls: SGML error at 9361.dtd, line 27 in declaration parameter 6:
       Formal public identifier "ISO 8879-1986//ENTITIES Laten 1/EN" invalid; treated
       informal
sgmls: SGML error at i:\9361\d001t011, line 3087 at ">":
       STEP1 element ended prematurely; required STEP2 omitted
       Element structure: DOCIM BODY CHAPTER PARA0 SUBPARA1 STEP1
sgmls: SGML error at i:\9361\d001t011, line 3112 at ">":
       STEP1 element ended prematurely; required STEP2 omitted
       Element structure: DOCIM BODY CHAPTER PARA0 SUBPARA1 STEP1
sgmls: SGML error at i:\9361\d001t011, line 5031 at ">":
       STEP1 element ended prematurely; required STEP2 omitted
       Element structure: DOCIM BODY CHAPTER PARA0 SUBPARA1 STEP1
sgmls: SGML error at i:\9361\d001t011, line 5056 at ">":
       STEP1 element ended prematurely; required STEP2 omitted
       Element structure: DOCIM BODY CHAPTER PARA0 SUBPARA1 STEP1
sgmls: SGML error at i:\9361\d001t011, line 5298 at ">":
       STEP1 element ended prematurely; required STEP2 omitted
       Element structure: DOCIM BODY CHAPTER PARA0 SUBPARA1 STEP1
sgmls: SGML error at i:\9361\d001t011, line 5319 at ">":
       STEP1 element ended prematurely; required STEP2 omitted
       Element structure: DOCIM BODY CHAPTER PARA0 SUBPARA1 STEP1
sgmls: SGML error at i:\9361\d001t011, line 5389 at ">":
       STEP1 element ended prematurely; required STEP2 omitted
       Element structure: DOCIM BODY CHAPTER PARA0 SUBPARA1 STEP1
sgmls: SGML error at i:\9361\d001t011, line 5430 at ">":
       STEP1 element ended prematurely; required STEP2 omitted
       Element structure: DOCIM BODY CHAPTER PARA0 SUBPARA1 STEP1
sgmls: SGML error at i:\9361\d001t011, line 5486 at ">":
       STEP1 element ended prematurely; required STEP2 omitted
       Element structure: DOCIM BODY CHAPTER PARA0 SUBPARA1 STEP1
sgmls: SGML error at i:\9361\d001t011, line 5524 at ">":
       STEP1 element ended prematurely; required STEP2 omitted
       Element structure: DOCIM BODY CHAPTER PARA0 SUBPARA1 STEP1
sgmls: SGML error at i:\9361\d001t011, line 5539 at ">":
       STEP1 element ended prematurely; required STEP2 omitted
       Element structure: DOCIM BODY CHAPTER PARA0 SUBPARA1 STEP1
TOTALCAP 150561/200000
  ENTCAP 13120/200000
ENTCHCAP  6975/200000
 ELEMCAP  3616/200000
  GRPCAP 24896/200000
```

```
EXGRPCAP    224/200000
 EXNMCAP    384/200000
  ATTCAP  78272/200000
ATTCHCAP    914/200000
AVGRPCAP  22080/200000
  NOTCAP     32/200000
NOTCHCAP     48/200000
```

11. Appendix C - Detailed Raster Analysis

11.1 All Raster Files

11.1.1 Output HiJaak/Ventura Publisher

A   ON POSITION #1 SWITCH
B   OFF POSITION #1 SWITCH (PRETRAVEL)
C   MECHANICAL DETENT
D   ON POSITION #2 SWITCH
E   OFF POSITION #2 SWITCH
F   STOP